PRELIMINARY STATEMENT

TO VOLCAN LAND AND WATER CO. OF PHYSICAL

SITUATION ON SAN LUIS REY RIVER RELATIVE TO INJUNCTION

SUIT BROUGHT BY CITY OF OCEANSIDE AND OTHERS.

Charles H. Lee, Civil & Hydraulic Engineer.

January 9th, 1915.

The physical situation on San Luis Rey River as it bears on the legal aspect is as follows. There is a stream having its source in the mountains 50 miles from the coast where it flows into the Pacific Ocean. This stream is fed by run-off from a tributary watershed the latter varying in width from 10 to 18 miles and having a total area of 564 sq. miles. The stream in the lower 30 miles of its course flows through a narrow valley which is confined between steep and precipitous granite mountains for the first 25 miles and for the last 5 miles between steep bluffs of the alluvial mesa formation which borders the ocean. The stream is intermittent in flow varying widely in different years and in different seasons of same year. It usually flows as a surface stream throughout its length, from a few weeks to a few months in the Spring each year, the length of the period and the amount depending upon the quantity and distribution of the rainfall. During the remainder of the year there is usually a small stream

flowing on the surface nearly to the Monserate Ranch, 20 miles of the Ocean, but the remainder of the channel is dry.

The river valley is quite level, has the same slope as the river and has a width varying from slightly more than a mile down to a few hundred feet. The valley is underlaid by more or less porous sands to varying depths, the maximum depths being about 100 feet. The voids in the sand are saturated with water to within a few feet of the surface and a permanent water table is maintained. The confining rock is impervious to water and at various points along the valley opens out and again closes in, thus forming a series of basins or underground reservoirs.

The source of supply of these reservoirs is three fold: (1) Water absorbed from the river and its tributaries during the period of surface flow, which water percolates laterally filling the voids adjacent to the river and to a greater or less distance from the channel but not for the full width of the valley; (2) water absorbed from direct rainfall upon the valley bottom lands which on account of the level porous character of the soil is a very large percentage of the rainfall; (3) percolation or sub-surface flow from tributary canyons, from the bordering mountain slopes, and from springs. The first two of these sources continue only during the rainy season and as a result ground water surface is at its highest level in the early spring. The supply by percolation from adjacent slopes and springs continues through the year, but

its influence is confined to the margins of the valley.

The reservoirs thus filled in the spring are depleted during the balance of the year. The principal loss is by evaporation from damp soil and transpiration from trees, grasses, weeds and crops. This results in a general lowering of the water plane all along the river valley of from 2 to 4 feet. In the higher basins where the material is coarser and the grade steeper there is also a movement of ground water from the upper to the lower portion of each basin, this resulting in a stable water plane close to the surface at the lower end and a fluctuating and deeper water plane at the upper end.

There is practically no continuous subsurface flow or underflow down the river valley such as has been recognized by the courts on certain streams in California and other western states. This is proved by the U. S. Geological Survey stream flow records at Bonsall and Oceanside. The former station is at the lower end of a large valley below which the granite hills close up and the bed-rock shoals, forming for a distance of nearly six miles a narrow canyon where the valley-fill rarely exceeds 1000 feet in width, and at a point 2 miles below the station is but 400 feet across. If there were a continuous underflow it would be brought to the surface at this point, but examination of the record shows that the stream is dry from June to December each year. Similarly at the Oceanside Gaging Station where the

valley suddenly contracts to 700 feet and back pressure from the Ocean should be effective, the record shows no flow from May to January. Using Slichter's diagram for computing flow of underground water (Water Supply Paper No. 140, p.14) and assuming section triangular 700 ft. wide and 60 feet maximum depth, porosity 36% effective size of sand grain 0.55 mil. and grade of 0.27 ft. per 100 shown by U. S. topographic sheet, the underflow down the canyon below Bonsall is but 2 M. I. At Oceanside gaging station it would be still less. This flow of water, although it might come under the legal definition of sub-flow (Weil, p.1014), is too small in amount to be given any consideration.

There are seven plaintiffs in the case owning lands along the San Luis Rey River which lands are embraced in part or whole within the valley bottom lands. The following plaintiffs claim riparian rights by virtue of physical contact of their land with the channel of San Luis Rey River; C. A. Canfield Estate, M. Pieper, City of Oceanside, Cornelius M. Hermans, and Carolina M. Winston. Plaintiffs David E. Jones and Eunice M. Jones claim that their lands lie in the level bottom land bordering the stream and are sub-irrigated moistened or made fertile by water flowing in the channel of the stream which water percolates through adjoining lands to and into their lands and that the subsoil of their lands lie at lower elevation than the river bed.

Plaintiffs C. A. Canfield Estate, Cornelius M. Hermans,

Carolina M. Winston, David E. Jones, and Eunice M. Jones claim to have raised crops on their land for many years past. Plaintiff City of Oceanside claims to have pumped from its land for municipal purposes for a period of ten years. Plaintiff M. Pieper does not claim either to have pumped water from his land or to have raised crops.

Plaintiffs claim that there is a perpetual subflow which moistens their lands and that if flood water be prevented even in part from flowing down the surface channel this subsurface flow will be diminished, and they will be irreparably damaged, as follows: (1) the quantity of water available by pumping from plaintiffs lands will be reduced; (2) water plane will be lowered so as to increase the cost of pumping from these lands and (3) render lands less fertile and more arid injuring crops which all depend upon moisture from percolating water, thus reducing land values. It is also claimed that interference with flood flow of stream will prevent overflow of flood water and consequent enriching of soil.

Plaintiffs are evidently proposing to establish the riparian character of their land on the theory of surface flow and diffused percolating water in a broad valley, being a common supply, as was held by the court in Hudson vs Dailey (156 Cal. 617, Weil,p. 993) Miller vs Bay Cities Water Company (157 Cal.256, Weil, p. 997) and Hayes-Chenoweth Co. vs. The Bay Cities Water

Co. In the first of these decisions "it was held that the stream on the surface and the underground diffusion of percolating water, while in the broad valley, were so connected that, though not one actual stream, they were nevertheless a continuous and common source of supply, in which all lands having access thereto in their natural situation are entitled equally to a reasonable use at any time." Similar opinions are held in the other cases. On this theory if plaintiffs can show that the source of ground water beneath their land is percolation from the San Luis Rey River they have established the riparian character of their land, Examination of these lands has indicated that all the plaintiffs can do this for a portion at least of their lands except Eunice M. Jones. The latter property it can probably be shown by data now being gathered, is largely supplied by percolation from springs at the foot of the bluff to the south and from direct rainfall. The proof of this will eliminate this property from the case. Of the others, if the present lands are the smallest tracts at any one time in single ownership the fact of a portion being riparian to the stream gives the whole tract a riparian character.

The defendant, Volcan Land and Water Company owning riparian land proposes to construct a dam on their land across the stream 40 miles from the Ocean and 25 miles above the highest lands of plaintiffs to store the flow of the stream and divert it

for sale and use outside the watershed on non-riparian land.

There are two classes of relative rights involved between the six plaintiffs (excluding Eunice M. Jones) and defendant. First, between two riparian proprietors, the Volcan Land and Water Company and the City of Oceanside neither seeking riparian use and both using the water on non-riparian lands. It has been held (Vernon Irr. Co. vs. Los Angeles, 106 Cal. 243 and Duckworth vs. Watsonville W. Co., 158 Cal. p. 206) that the lower (City of Oceanside) cannot while so engaged assert a riparian right. The case is thus resolved to one between two appropriators and thus the City of Oceanside can only claim damage as against the amount of water actually and beneficially used in the past. As this amount, by the Citys own records, is small (approximately 20 M. I. continuous flow) the proof of no damage by defendants action should be easily made.

Second, rights as between riparian proprietors and an appropriator. There are many and conflicting decisions on this point, but from a conservative analysis of the situation it may be stated that as against a riparian owner an appropriator has no rights in a stream and may be absolutely prohibited by the court from diverting water, unless he can show that there is a surplus in excess of the quantity necessary and useful in order that the riparian owner may enjoy the full use of his rights now and at all times in the future. (Elements of Western Water Law

Chandler, p. 19). The company if able to prove that the proposed diversion of water at Warner's Dam will not damage these five riparian owners in the present or possible future enjoyment of their rights should get a favorable decision. This proof will also cover the City of Oceanside and Eunice M. Jones land should the courts hold that they have riparian rights as against an appropriator.

The three elements of damage which plaintiffs claim will result from the proposed diversion by defendant are: (1) that the quantity of water available by pumping from plaintiffs lands will be reduced: (2) that the water plane will be lowered so as to increase the cost of pumping from the lands and render the lands less fertile and more arid injuring crops which all depend upon moisture from percolating water, thus reducing land values; (3) prevent overflow of flood water and consequent enriching of soil. The third item has no weight as it is a well known fact which local witnesses can prove that the river in flood does more damage than benefit by cutting away good soil and depositing sand bars, and that crops are not grown on the flood plain of the river. The problem thus resolves itself into the question, will the amount of water flowing in the river be sufficient and the manner and time of its occurrence be favorable to annually recharge the sands along the river valley to the extent that the river now recharges them, after the diversion is made at Warner's Dam?

As has been shown above, there is no question of subsurface flow involved. It is purely a question of filling the voids in the layer of sands drained out by the evaporation losses of the preceding season. By way of passing comment it is interesting to note that with a sufficient average annual supply available to refill the voids, the increased lowering of the water plane will increase the amount available for pumping since it makes available a greater storage capacity in the sands. The idea of its being necessary to keep up the water plane in this valley in order to maintain the supply of water available for pumping is like refusing to draw upon a full storage reservoir in order to maintain the supply.

The answer to the above question is obtainable by an analysis, first, of the amount of water now annually absorbed from the flow of San Luis Rey River, and second, of the amount of water flowing in the river and the manner of its occurrence subsequent to the diversion at Warners Dam.

ABSORPTION FROM FLOW OF RIVER

This computation will be made for the section of the river valley from the U.S.G.S. gaging station above Pala and the Ocean. This point although nearly ten miles above the highest riparian land in the suit, the C. A. Canfield Estate, is the nearest point above at which stream gagings are available.

There are two possible methods of computing the amount

of water annually absorbed from the river.

1. The volume of water represented by the annual rise in the water plane during the rainy season plus the evaporation loss during the period of rise plus the difference in flow of the stream at Pala and Oceanside May 1 to Dec. 31, less the volume of water absorbed from direct precipitation. For this computation there are available U.S.G.S. Records of water plane fluctuation along the river valley and also observations made under my supervision and personally; maps made under my direction showing outline of the valley bottom lands, segregated into areas fed directly from the river and from lateral seepage; determinations yet to be made of the porosity of sands lying between the high and low water levels; estimate of evaporation loss during period of recharge; measurements of flow of living stream near Pala and Oceanside by U. S. G. S.; and determination of rainfall along river valley from rainfall map prepared by me from all available rainfall records. The result of this computation is as follows:

(a) Volume of water represented by annual rise of water plane throughout portion of valley-fill from Pala gaging station and Ocean fed by percolation from river and direct rainfall.

Area of porous sand as obtained from map 6671 ac.

Average annual use of water plane 3 ft.

Porosity of sands 36%.

6671 x 3 x .36 = 7210 ac. ft.

(b) Evaporation loss from soil and vegetation during period of rise in water plane.

Period of rise in water plane

Jan. 1 to April 15.

Per cent of total annual evaporation occuring Jan.1 to Apr.15 (Sweetwater Res. 4 yrs. 17%; La Mesa Res.1 yr.19%; Big Lake 21%) Average 19%.

Total annual evaporation loss from portion of valley-fill fed from river and direct rainfall 12,220 ac.ft.

12,220 x .19 = 2325 ac. ft.

(c) Difference of flow of river at Pala and Oceanside gaging stations May 1 to Dec. 31.

Year 1912 - Pala 4500 ac. ft.
Oceanside 1540 " "
Difference 1941 " "

Year 1913 - Pala 1941 ac. ft.
Oceanside 0 " "
Difference 1941 " "

Average Difference = 2450 ac. ft.

(d) Total volume of water absorbed by sands during year.

a - 7210 ac. ft.

b - 2325 ac. ft.

c - 2450 ac. ft.

11985 ac. ft.

(e) Volume of water absorbed from direct rainfall.

Area of porous sands 6671 acres.

Depths of rainfall taken from rainfall map (See Table)

Percent of rainfall absorbed 60%.

Total Volume absorbed (Table) 4216 acre feet.

(f) Volume of water absorbed from flow of river by sands of valley - fill from Pala gaging station to Ocean.

d - Total volume absorbed 11985 ac.ft.

e - Volume absorbed from rainfall, 4216 "

Total absorbed from river, 7769 ac.ft.

2. The total evaporation and transpiration loss from the area of bottom land to which percolation from the river extends, less the volume of water absorbed from direct precipitation. There is available for this a map prepared under my direction showing in detail the classification and area of bottom lands from which evaporation occurs and an exhaustive study of existing evaporation data as applied to these areas. Also the isohyetose map already mentioned and the results of this computation are as follows:

(a) Total evaporation and transpiration, loss from bottom lands to which percolation from river extends from Pala gaging station to Ocean.

Area from which loss occurs as obtained from map, 5194 ac

Depths of annual evaporation from different portions of area obtained from evaporation curves (See Fig._____ & Table_____)

Total annual evaporation loss 12220 ac.ft.

(b) Volume of water absorbed from direct rainfall.

As above 4216 ac.ft.

(c) Volume of water absorbed from flow of river by sands of valley fill from Pala gaging station to Ocean.

a - 12,220 ac.ft.

b - 4,216 "

8,004 ac.ft.

The close agreement of the two results as computed from practically independent data are indicative of their reliability and an average quantity of 7890 ac.ft. will be adopted.

FLOW OF SAN LUIS REY RIVER AT PALA SUBSEQUENT TO CONSTRUCTION OF WARNERS DAM

This computation will be made on the assumption of a dam being built of sufficient height to store and divert all of the flow of the river at the damsite. This assumption is justified by the Company's present plans and is the most possible condition from the standpoint of riparian owners.

There are available for this computation;

(1) Records of flow of San Luis Rey River by U. S. Geological Survey at Station near Pala October 1903 to June 1914 with the exception of July to December 1910 and July 1911 to March 1912 which by interpolation has been extended into a ten season record;

(2) Records of flow at Warners Dam by Pacific L. & P. Co. for season 1905-6 by U. S. G. S. May 1911 to date which gives a four season record;

(3) Eight rainfall records extending over 25 or more years and well distributed over San Diego County;

(4) Rainfall map of drainage area above Pala gaging station based on 35 rainfall station records in and near the drainage area;

(5) Record of diversions by Escondido Ditch for season 1904-5 to date.

The computation program was:

(1) Ascertain the run-off in acre feet per square mile at Pala and Warner gaging stations for all seasons of record;

(2) Ascertain the character of rainfall year as a percent for the 20 seasons 1894-5 to 1913-14;

(3) Plat the rainfall and run-off data and draw run-off curves for the drainage areas above Pala;

(4) Ascertain the percentage that run-off per sq.mi. from area above Warner bears to that above Pala (found to be quite

consistently 93%);

(5) Computed for the period 1894-5 to 1913-14, the residual seasonal flow at Pala if all water flowing at Warner was diverted and also that by E. M. W. Co. taking into consideration the amount which V. L. & W. Co. would let down to E. M. W. Co. under the terms of contract.

As a result of this computation it appears that the average residual seasonal flow at Pala would be 11,738 ac. ft. This quantity exceeds by nearly 4,000 ac. ft. the annual amount absorbed from the river by the sands and in no single season of the 20 was the flow entirely lacking. In addition to the supply at Pala there is run-off from the drainage area below Pala which in ordinary seasons such as 1913-14 is nearly sufficient to recharge the depleted water plane without the water from above Pala. For average conditions therefore, there will be ample water available to annually replenish the depleted water plane along the river valley from Pala to the Ocean.

The conditions during dry years are still under study.

Ed Fletcher Papers

1870-1955

MSS.81

Box: 39 Folder: 8

Business Records - Reports - Lee, Charles H - "Preliminary Statement to Volcan Land and Water Co. of Physical Situation on San Luis Rey River Relative to Injunction Suit Brought by City of Oceanside and Others"